UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,327	05/09/2005	Stefano Ambrosius Klinke	3717483.00031	4925

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EXAMINER
SAINT CYR, LEONARD

ART UNIT	PAPER NUMBER
2626	

NOTIFICATION DATE	DELIVERY MODE
03/03/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _30 December 2010_.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _7,9 and 11_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _7,9 and 11_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _05/09/05_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some * c) ☐ None of:

      1. ☒ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed 12/30/10 have been fully considered but they are not

persuasive.

Applicant argues that neither Malah nor Gao et al., nor Udaya Bhaskar et al.,

teach a memory unit, communicatively coupled to said bandwidth expansion device,

wherein said memory device stores a reference table that includes at least one

parameter value used for the bandwidth expansion for at least two net bit rates of the

narrowband speech signal (Amendment, pages 4 – 11).

The examiner disagrees, since Gao et al., disclose "bandwidth expansion

provides additional robustness against signal and round-off errors during subsequent

encoding. According to rate selection, the bit-stream may be decoded to generate the

post-processed synthesized speech. The decoders 90, and 92 perform inverse

mapping of the components of the **bit-stream to algorithm parameters**. The inverse

mapping may be followed by a type classification dependent synthesis within **the full**

and half-rate codecs 22, and 24. Adaptive gain control module brings the energy level

of the synthesized speech…parameters…may be adapted according to the rate

selection and the long-term spectral characteristic determined by the characterization

module" (col.31, lines 64 – 67; col.56, lines 20 – 26; col.58, lines 13 – 17, and 43 – 45;

performing **inverse mapping** to algorithm **parameters** implies a reference table stored

in a memory that includes at least one parameter value for the bandwidth expansion for

at least two net bit rates of the narrowband speech signal, **since the inverse mapping of parameters is done based on a selected rate**).

Claim Rejections - 35 USC § 103

2.   The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3.   Claims 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malah (US PAP 2003/0093278) in view of Gao et al., (US Patent 6,574,593); and further in view of Udaya Bhaskar et al., (US Patent 6,691,092).

As per claim 7, Malah teaches a communication device, comprising:

a bandwidth expansion device for expanding a bandwidth of a narrowband speech signal ("extending the bandwidth of a narrowband signal") at its low-frequency and/or high-frequency end ("high band region...lower band") by synthesis of at least one frequency band contained within said narrowband speech signal, the narrowband speech signal having at least two net bit rates ("synthesizing a highband signal from the narrowband speech" paragraphs 10, 30, and 8, first four lines).

However, Malah does not specifically teach a memory unit, communicatively coupled to said bandwidth expansion device, wherein said memory device stores a reference table that includes at least one parameter value used for the bandwidth expansion for at least two net bit rates of the narrowband speech signal; the reference table takes account, as parameters, of an amount of energy in a synthesized frequency band and of a spectral structure of the synthesized frequency band; the spectral

structure of the synthesized frequency band takes account of a probability of
occurrence of artifacts at specific frequencies in the narrowband speech.

Gao et al., teach that bandwidth expansion provides additional robustness
against signal and round-off errors during subsequent encoding. According to rate
selection, the bit-stream may be decoded to generate the post-processed synthesized
speech. The decoders 90, and 92 perform inverse mapping of the components of the
bit-stream to algorithm parameters. The inverse mapping may be followed by a type
classification dependent synthesis within **the full and half-rate** codecs 22, and 24.
Adaptive gain control module brings the energy level of the synthesized
speech...parameters...may be adapted according to the rate selection and the long-
term spectral characteristic determined by the characterization module (col.31, lines 64
– 67; col.56, lines 20 – 26; col.58, lines 13 – 17, and 43 – 45; performing **inverse**
mapping to algorithm **parameters** implies a reference table stored in a memory that
includes at least one parameter value for the bandwidth expansion for at least two net
bit rates of the narrowband speech signal, **since the inverse mapping of parameters**
is done based on a selected rate).

Therefore, it would have been obvious to one of ordinary skill in the art at the
time the invention was made to use inverse mapping of the components of the bit-
stream as taught by Gao et al., in view of Malah, because that would provide high
quality decompressed speech (col.4, lines 23 - 25).

However, Gao et al., in view of Malah do not specifically teach that the spectral structure of the synthesized frequency band takes account of a probability of occurrence of artifacts at specific frequencies in the narrowband speech.

Udaya Bhaskar et al., teach that Adaptive bandwidth broadening is employed for post-processing inactive speech frames to mitigate annoying artifacts due to spurious spectral peaks by (1) computing a measure of VAD likelihood by summing the VAD flags for the preceding, the current and the next two frames (which are available due to the 2 frame look-ahead employed at the encoder), and (2) using the VAD likelihood measure and voicing measure to determine the degree of bandwidth broadening necessary for the interpolated LP synthesis filter coefficients (col.12, lines 35 -50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to specify the provability of artifacts as taught by Udaya Bhaskar et al., in Gao et al., in view of Malah, because that would help determine the degree of bandwidth broadening necessary for the interpolated LP synthesis filter coefficients (col.12, lines 35 -50).

As per claim 9, Malah teaches a method for expanding a bandwidth of a narrowband speech signal for a communication terminal, comprising:

detecting a net bit rate of the narrowband speech signal of the communication terminal ("the decoded output from a **low bit-rate** speech coder"; paragraph 179);

expanding the bandwidth by means of a bandwidth expansion device on the basis of the parameters determined for a current bit rate ("obtaining parameters that

represent the wideband spectral envelope from the narrowband spectral

representation…parametric bandwidth extension systems"; paragraph 73, lines 1 – 6;

paragraphs 67, and 117).

However, Malah does not specifically teach accessing a memory that includes a

reference table which includes associations between at least two net bit rates and

parameter values used for bandwidth expansion, in order to determine the at least one

parameter value which is suitable for the detected net bit rate; the reference table

includes data relating to an amount of energy in a synthesized frequency band and of a

spectral structure of the synthesized frequency band; the spectral structure of the

synthesized frequency band takes account of a probability of occurrence of artifacts at

specific frequencies in the narrowband speech.

Gao et al., teach that bandwidth expansion provides additional robustness

against signal and round-off errors during subsequent encoding. According to rate

selection, the bit-stream may be decoded to generate the post-processed synthesized

speech. The decoders 90, and 92 perform inverse mapping of the components of the

bit-stream to algorithm parameters. The inverse mapping may be followed by a type

classification dependent synthesis within **the full and half-rate** codecs 22, and 24.

Adaptive gain control module brings the energy level of the synthesized

speech…parameters…may be adapted according to the rate selection and the long-

term spectral characteristic determined by the characterization module (col.31, lines 64

– 67; col.56, lines 20 – 26; col.58, lines 13 – 17, and 43 – 45; performing **inverse**

mapping to algorithm **parameters** implies a reference table stored in a memory that

includes at least one parameter value for the bandwidth expansion for at least two net

bit rates of the narrowband speech signal, **since the inverse mapping of parameters**

is done based on a selected rate).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to use inverse mapping of the components of the bit-

stream as taught by Gao et al., in view of Malah, because that would provide high

quality decompressed speech (col.4, lines 23 - 25).

However, Gao et al., in view of Malah do not specifically teach that the spectral

structure of the synthesized frequency band takes account of a probability of

occurrence of artifacts at specific frequencies in the narrowband speech.

Udaya Bhaskar et al., teach that Adaptive bandwidth broadening is employed for

post-processing inactive speech frames to mitigate annoying artifacts due to spurious

spectral peaks by (1) computing a measure of VAD likelihood by summing the VAD

flags for the preceding, the current and the next two frames (which are available due to

the 2 frame look-ahead employed at the encoder), and (2) using the VAD likelihood

measure and voicing measure to determine the degree of bandwidth broadening

necessary for the interpolated LP synthesis filter coefficients (col.12, lines 35 -50).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to specify the provability of artifacts as taught by Udaya

Bhaskar et al., in Gao et al., in view of Malah, because that would help determine the

degree of bandwidth broadening necessary for the interpolated LP synthesis filter

coefficients (col.12, lines 35 -50).

4.   Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Malah

(US PAP 2003/0093278) in view of Gao et al., (US Patent 6,574,593), further in view of

Udaya Bhaskar et al., (US Patent 6,691,092); and further in view Van Der Vleuten (US

Parent 6,498,811).

As per claim 11, Malah in view of Gao et al., further in view of Udaya Bhaskar et

al., do not specifically disclose the energy of the synthesized frequency band decreases

as the net bit rate decreases.

Van Der Vleuten teaches that the bit rate of the lossless encoded residue signal

will decrease, accordingly, as the energy content of the second residue signal

decreases (col.4, lines 33 – 36).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made for the bit rate to be proportional to the energy as taught

by Van Der Vleuten in Malah in view of Gao et al., in view of Udaya Bhaskar et al.,

because that would reduce the bit rate of a digital information signal more efficiently

(col.1, lines 45 – 47).

Conclusion

5.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to LEONARD SAINT CYR whose telephone number is

(571)272-4247. The examiner can normally be reached on Mon- Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone

number for the organization where this application or proceeding is assigned is (571)-

273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leonard Saint-Cyr/

Primary Examiner, Art Unit 2626